NEXCOM International Co., Ltd.

Multi-Media Solutions

Digital Signage Platform

NDiS 167

User Manual

NEXCOM International Co., Ltd.
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Preface

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Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

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RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2006 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

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Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

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Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

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Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

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Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the NDiS 167 package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Name	Description	Qty
1	5044440080X00	GASKET FOR INTEL CPU KGS:C-4505(35x35x1)+G4000	35x35x 1.1mm	1
2	7400080005X00	POWER ADAPTER w/C6 Socket L.T.E.:LTE90E-S2-210	80W 12V/6.67A MINI DIN 4PIN Male Plug	1
3	50311F0100X00	ROUND HEAD SCREW W/SPRING+FLAT WASHER LONG FEI:P3x6L	P3x6 iso/SW6x0.5 NI	4
4	602DCD0539X00	NDiS167 MANUAL DRIVER DVD VER:1.0		1

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Ordering Information

The following information below provides ordering information for NDiS 167.

- **NDiS 167 (P/N: 10W00016700X0)**
  - 3rd generation Intel® Core™ processor (up to 35W) system, Intel® QM77 chipset
  - Intel® QM77
  - Intel® Integrated Graphics HD4000

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Chapter 1: Product Introduction

Overview

NDiS 167 Ivy Bridge player is a powerful digital signage player which is built around the superb technology of 3rd generation Intel® Core™ processor family series and QM77 integrated graphics controller. The digital signage player can offer impressive system performance and full HD videos. With support for smooth 1080P video playback on three independent displays, the 1080P signage player can fully satisfy customer's expectation and therefore be used in applications such as advertising, hospitality, brand promotion and digital menu board.

Key Features

- 3rd Generation Intel® Core™ processor
- Intel® integrated HD 4000 graphic engine
- Compact and Slim Design
- 3 Independent display
- USB 3.0, Dual GbE LAN support
- WLAN/ TV tuner support
- DirectX 11 support

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Hardware Specifications

CPU Support

- 3rd generation Intel® Core™ rPGA socket type processor

Chipset

- Intel® QM77

Main Memory

- Two 240-pin DDR3 DIMM sockets
- DDR3 1600/1333MHz SDRAM with un-buffered non-ECC memory module
- Support up to 16GB memory

Graphics

- Graphics Chip
  - Intel® integrated HD4000 graphic engine
  - Enhanced encode/decode/transcode capability
  - Supports DX11, HDMI V1.4 and OpenGL 3.0
- DVI
  - Support up to 1920 x 1200 @ 60Hz
- HDMI
  - Support up to 2560 x 1600 @ 60Hz
- DisplayPort
  - Support up to 2560x 1600 @ 60Hz

Network

- Intel® WG82579LM GbE PHY
- 2x RJ45 connector with LEDs
  - 1x RJ45 from Intel® WG82579LM GbE PHY, support Intel® Active Management Technology 8.0
  - 1x RJ45 from Intel WG82583 GbE controller
- Support PXE LAN boot ROM for Ethernet boot up
- Support WOL

Storage

- 1x 22pin SATA right angle connector for slid in 2.5” SATA HDD/SSD
- 1x 7-pin SATA connector
- 1x JST 2.5mm 2-pin power connector for SATA DOM

Audio

- ALC 886 audio codec
- 1x audio jack for analog output with 1W/8ohm amplifier
- 1x audio jack for analog input (programmable as analog output)
- 1x SPDIF for digital output
- 1x HDMI for PCM audio output

I/O Interfaces

- Serial
  - COM 1 (RS232) on front panel
  - COM 2 (RS232) on front panel
- USB 2.0
  - USB 2.0 Port 1~2 on the rear panel
  - USB 2.0 Port 3~4 on the front panel
  - USB 2.0 Port 5~8 reserved, JST
  - USB 2.0 Port 9 to mini-PCIe
  - USB 2.0 Port 10 to mini-PCIe

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- USB 3.0
  - Supports USB wake up
  - USB 3.0 Port 1~2 + USB2.0 Port 1~2 on the rear panel
  - USB 3.0 Port 3~4 + USB2.0 Port 3~4 on the front panel
- GPIO
  - 8 GPIO lines (GPI 0~3 and GPO 0~3); TTL Level (0/5V)
  - 2x5 pin header, 2.54mm
- Others
  - Onboard buzzer
  - RTC reset: 1x3 pin header, 2.54mm
  - 1x SIM Slot for 3G

Power Supply

- Onboard DC to DC
  - Support power range design: +12V +/-10% DC input
  - 4-pin Mini-DIN power jack
  - 4-pin power connector input
  - Supports power on after failure
  - Supports soft off
  - Supports alarm wake up
  - Supports WOL
- External adapter
  - +12V DC power adapter

RTC Battery

- On chip RTC with battery back up/ 1x external Li-ion battery

BIOS

- AMI system BIOS
- 64Mbits SPI flash ROM
- Supports Intel® AMT 8.0

System Management

- Monitoring
  - Super IO built-in function (IT8728F)
  - Monitoring of 5 voltages, 3 temperatures
    4 voltages (for +3.3V, +5V, +12V, Vcore)
    3 temperatures (CPU, two external temperature sensor)
    2x FAN 3-pin connectors
- Watchdog
  - Watchdog timeout is programmable by software from 1 second to 255 seconds and from 1 minute to 255 minutes
  - Tolerance 15% under room temperature 25°C

Operating System Support

- Microsoft
  - XP/ Win 7/ WES2009/ WES7

Main Board

Onboard I/O

- USB 2.0
  - 1x JST for 4x reserved USB 2.0 ports
  - 1x USB 2.0 Port to mini-PCIe1
  - 1x USB 2.0 Port to mini-PCIe2

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Others

- Onboard buzzer
- RTC reset: 1x3 pin header, 2.54mm
- IR interface: 1x5 pin header, 2.54mm
- 4GPI/4GPO/Sleep button/Power button, 2x5 pin header, 2.54mm

External I/O

- Front I/O
  - Power button
  - Power/HDD LED
  - 2x USB 3.0
  - 2x D-sub9, COM port
  - 1x reset onboard push button
- Rear I/O
  - 1x audio out/ 1x audio in
  - 1x SPDIF
  - 2x USB 3.0
  - 2x RJ45, Gigabit LAN ports
  - 1x DVI-I
  - 1x HDMI
  - +12V DC-in
  - 3x Antenna holes for WiFi and TV tuner
  - 1x DP

Physical Characteristics

- Dimensions (W x D x H)
  - 250mm x 190mm x 40mm (without bracket)
- Color
  - Silver+black
- Mounting
  - Optional wall mount bracket and VESA mount bracket
- Cooling
  - Passive cooling for fanless configuration
  - Option smart FAN tray with system noise under 35dBA

Expansion

- 2x mini-PCIe
- Supports wireless LAN module & DVB-T/ TV-tuner module
- Supports wake on WLAN feature

Environment

- Operating temperature: 100% CPU loading and component thermal profile : 0 ~ 40 °C
- Storage temperature: -40°C ~80°C
- Relative humidity (non-condensing): 95%

Certificate

- CE
- FCC Class A

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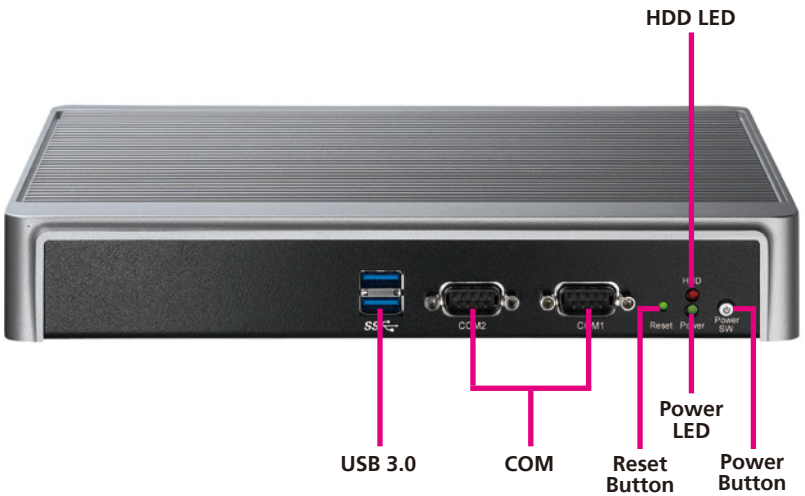
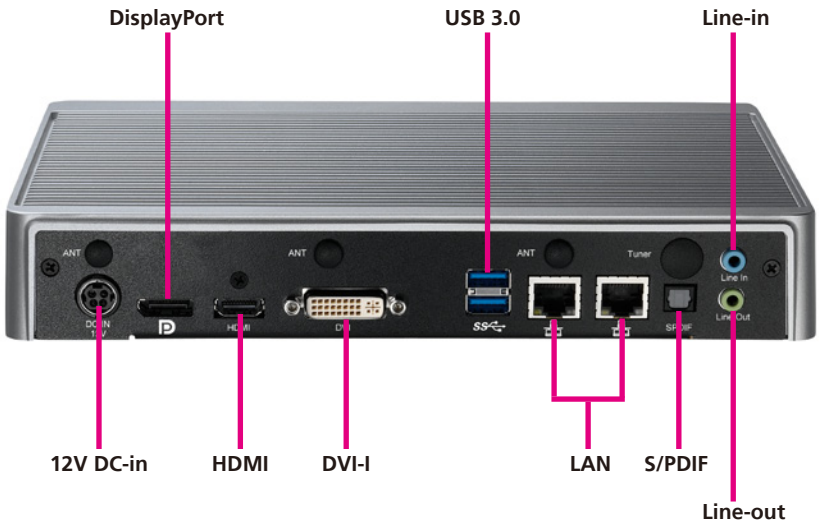
Physical Features

Front Panel



Side Panel



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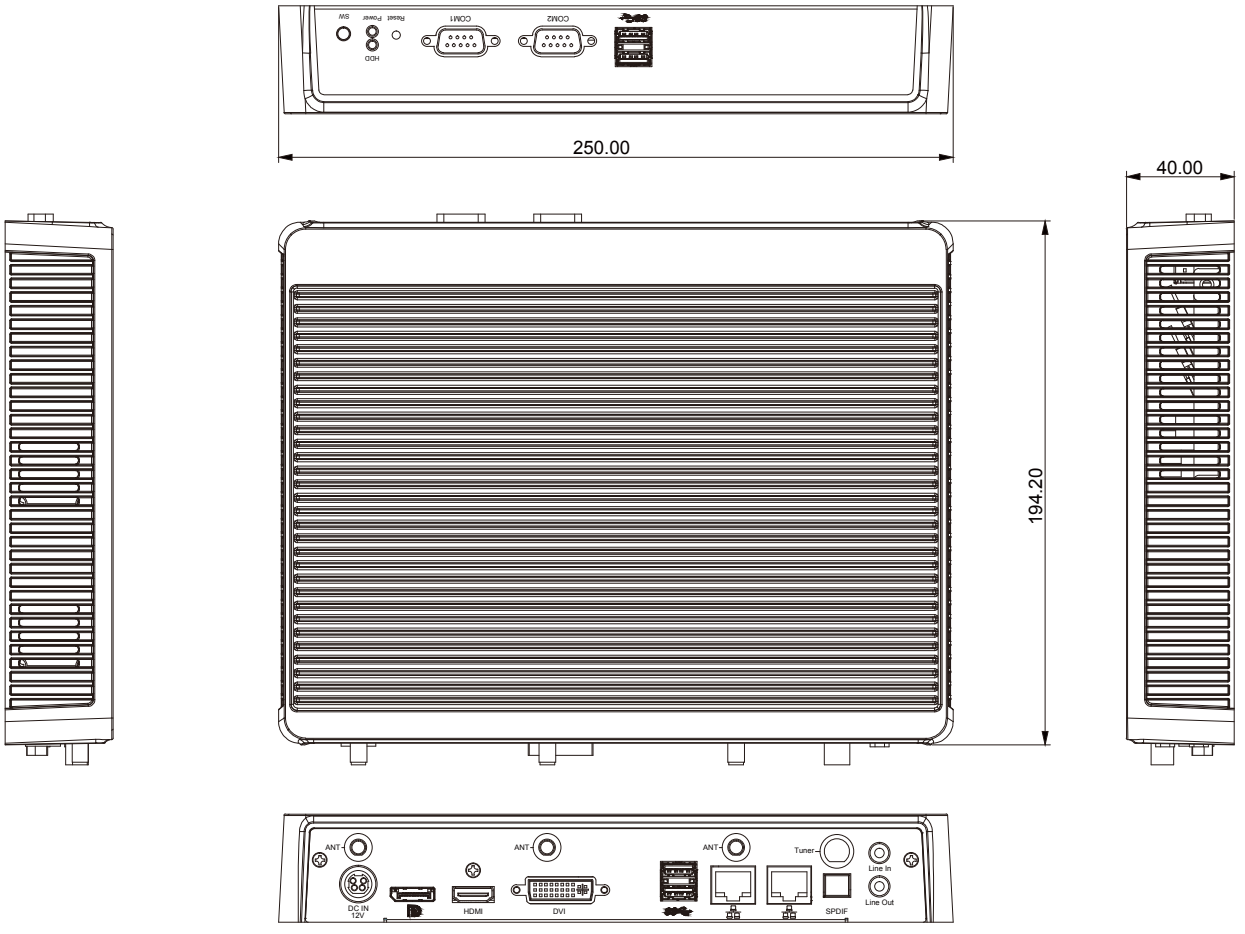
Mechanical Dimensions



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Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the NDiS 167 motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

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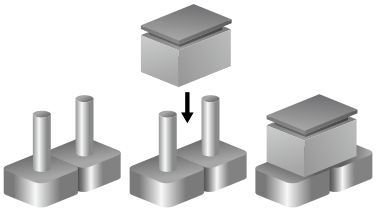
Jumper Settings

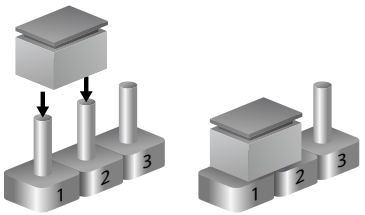
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



Three-Pin Jumpers: Pins 1 and 2 are Short



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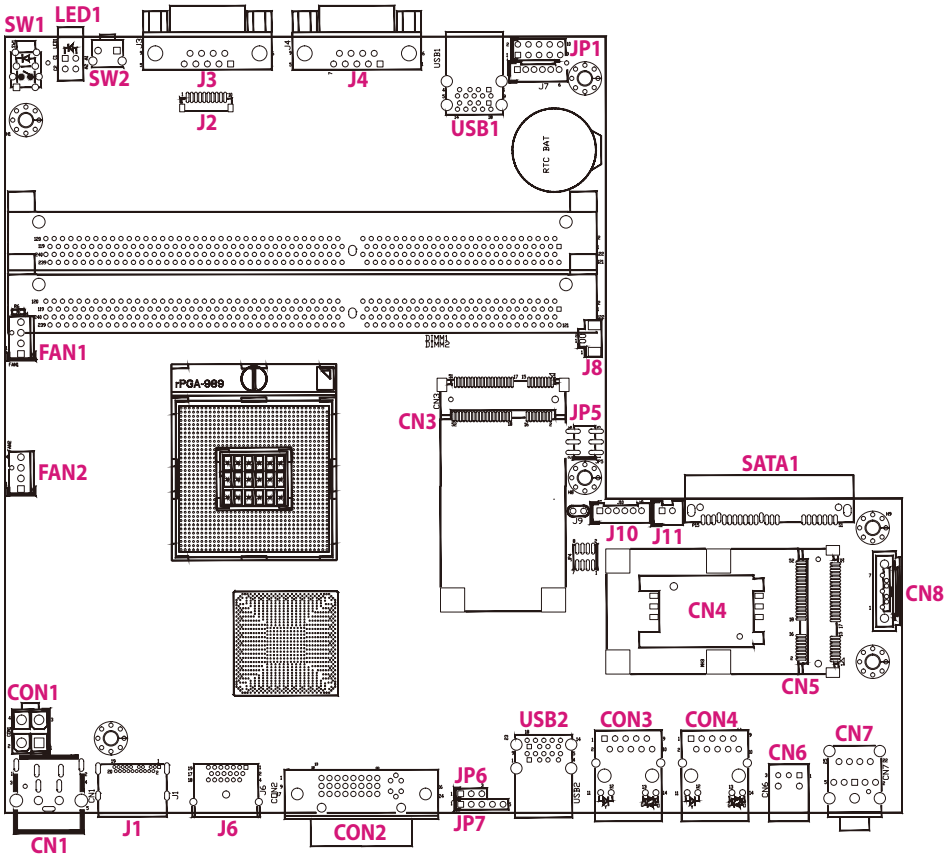
Locations of the Jumpers and Connectors

NDiB 167

The figure below is the NDiB 167 motherboard which is the motherboard used in the NDiS 167 system. It shows the locations of the jumpers and connectors.



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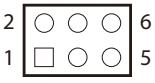
Jumpers

RTC/ME Clear Select

Connector type: 2x3 6-pin header
Connector location: JP5



Pin	Settings	Pin	Settings
1-3	Normal	3-5	CLR CMOS
2-4	Normal	4-6	CLR ME

1-3 On: default

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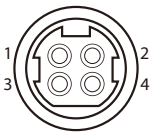
Connector Pin Definitions

External I/O Interfaces

DC Power Input

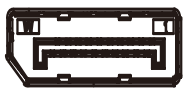
Connector type: 4-pin DC Jack
Connector location: CN1



Pin	Definition
1	12V DC_IN
2	12V DC_IN
3	GND
4	GND
5	GND

DisplayPort

Connector type: DisplayPort
Connector location: J1



Pin	Definition	Pin	Definition
1	DP_DATA0_P	2	GND
3	DP_DATA0_N	4	DP_DATA1_P
5	GND	6	DP_DATA1_N
7	DP_DATA2_P	8	GND
9	DP_DATA2_N	10	DP_DATA3_P
11	GND	12	DP_DATA3_N
13	GND	14	GND
15	DP_AUX_P	16	GND
17	DP_AUX_N	18	HPD
19	GND	20	VCC3

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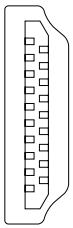
HDMI

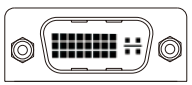
Connector type: HDMI port
Connector location: J6



Pin	Definition	Pin	Definition
1	HDMI_D2+	2	GND
3	HDMI_D2-	4	HDMI_D1+
5	GND	6	HDMI_D1-
7	HDMI_D0+	8	GND
9	HDMI_D0-	10	HDMI_CLK+
11	GND	12	HDMI_CLK-
13	NC	14	NC
15	HDMI_DDC_SCL	16	HDMI_DDC_SDA
17	GND	18	VCC5
19	HDMI_HPD		

DVI-I

Connector type: 24-pin D-Sub, 2.0mm-M-180 (DVI)
Connector location: CON2



Pin	Definition	Pin	Definition
1	TMDS_D2-	2	TMDS_D2+
3	GND	4	NC
5	NC	6	DDC_CLK
7	DDC_DAT	8	CRT_VSYNC
9	TMDS_D1-	10	TMDS_D1+
11	GND	12	NC
13	NC	14	VCC5
15	GND	16	DVI_HPD
17	TMDS_D0-	18	TMDS_D0+
19	GND	20	CRT_DDC_DAT
21	CRT_DDC_SCL	22	NC
23	TMDS_CLK+	24	TMDS_CLK-
C1	CRT_RED	C2	CRT_GREEN
C3	CRT_BLUE	C4	CRT_HSYNC
C5A	CRT_GND	C5B	CRT_GND

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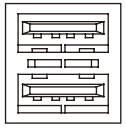
USB 3.0 Ports

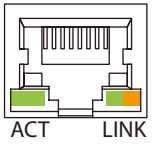
Connector type: Dual USB 3.0 ports
Connector location: USB1 and USB2



Pin	Definition	Pin	Definition
1	VCC	2	USB0_N
3	USB0_P	4	GND
5	USB3_RX0_N	6	USB3_RX0_P
7	GND	8	USB3_TX0_N
9	USB3_TX0_P	10	VCC
11	USB1_N	12	USB1_P
13	GND	14	USB3_RX1_N
15	USB3_RX1_P	16	GND
17	USB3_TX1_N	18	USB3_TX1_P

LAN Ports

Connector type: RJ45 port with LEDs
Connector location: CON3 and CON4



Pin	Definition	Pin	Definition
1	TCT	2	TD4-
3	TD4+	4	TD3-
5	TD3+	6	TD2-
7	TD2+	8	TD1-
9	TD1+	10	TCTG
11	Left_LED+	12	Left_LED-
13	Right_LED+	14	Right_LED-

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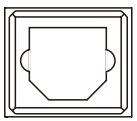
S/PDIF Connector

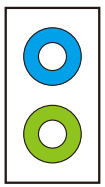
Connector type: S/PDIF Connector
Connector location: CN6



Pin	Definition
1	GND
2	VCC
3	SPDIF OUT

Power on/off Switch

Connector type: 2x 3.5mm TRS
Connector location: CN7



Pin	Definition	Pin	Definition
1	GND	2	FRONT-L
3	GND	4	FRONT-JD
5	FRONT-R	N/A	N/A
22	LINE-L	23	GND
24	LINE-JD	25	LINE-R

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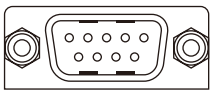
COM Ports

Connector type: DB-9 port, 9-pin D-Sub
Connector location: J3 and J4



Pin	Definition	Pin	Definition
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

Reset Button

Connector location: SW2

Pin	Definition
1-2	System Reset

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Status LEDs

Connector location: LED1

Status	LED Color
PWR	Green
HDD	Yellow

Power on/off Switch

Connector location: SW1

Status	LED Color
Standby	Red
Operation	Blue

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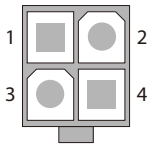
Internal Connectors

DC-in Power Connector

Connector type: 2x2 4-pin header
Connector location: CON1



Pin	Definition
1	GND
2	GND
3	12V DC_IN
4	12V DC_IN

USB 2.0 JST Connector

Connector type: 1x6 JST, 6-pin header, 2.00mm pitch
Connector location: J10

Pin	Definition	Pin	Definition
1	VCC	2	USB0_N
3	USB0_P	4	USB1_N
5	USB1_P	6	GND

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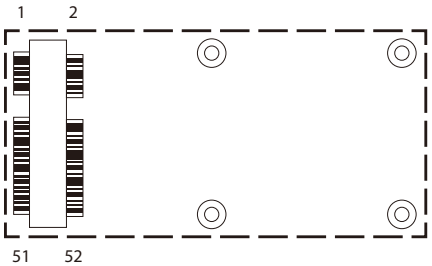
Mini-PCIe Connector

Connector location: CN3



Pin	Definition	Pin	Definition
1	WAKE#	2	3.3VSB
3	NC	4	GND
5	NC	6	1.5V
7	CLK_REQ#	8	NC
9	GND	10	NC
11	PCIE_CLK#	12	NC
13	PCIE_CLK	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	WLAN_DIS#
21	GND	22	RESET#
23	PCIE_RX_N	24	3.3VSB
25	PCIE_RX_P	26	GND

Pin	Definition	Pin	Definition
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TX_N	32	SMBDAT
33	PCIE_TX_P	34	GND
35	GND	36	USB_N
37	GND	38	USB_P
39	3.3VSB	40	GND
41	3.3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3VSB

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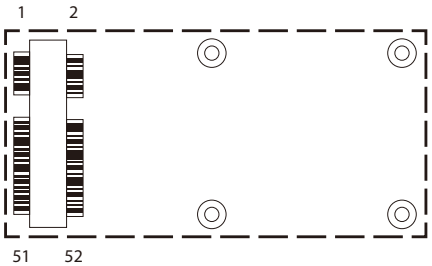
Mini-PCIe Connector

Connector location: CN5



Pin	Definition	Pin	Definition
1	WAKE#	2	3.3VSB
3	NC	4	GND
5	NC	6	1.5V
7	CLK_REQ#	8	UIM_PWR
9	GND	10	UIM_DAT
11	PCIE_CLK#	12	UIM_CLK
13	PCIE_CLK	14	UIM_RST
15	GND	16	NC
17	NC	18	GND
19	NC	20	WLAN_DIS#
21	GND	22	RESET#
23	PCIE_RX_N	24	3.3VSB
25	PCIE_RX_P	26	GND

Pin	Definition	Pin	Definition
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TX_N	32	SMBDAT
33	PCIE_TX_P	34	GND
35	GND	36	USB_N
37	GND	38	USB_P
39	3.3VSB	40	GND
41	3.3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3VSB

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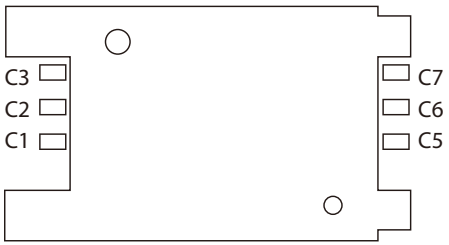
SIM Card Connector

Connector location: CN4



Pin	Definition	Pin	Definition
C1	UIM_PWR	C2	UIM_RST
C3	UIM_CLK	C5	GND
C6	NC	C7	UIM_DAT

Debug 80 Port Connector

Connector type: 1x10 10-pin header, 1.00mm pitch
Connector location: J2

Pin	Definition	Pin	Definition
1	GND	2	PCIRST#
3	33M_CLK	4	LPC_FRAME#
5	LPC_AD3	6	LPC_AD2
7	LPC_AD1	8	LPC_AD0
9	3.3V	10	3.3V

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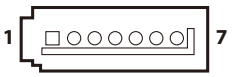
SATA Connector

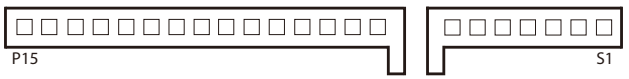
Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: CN8



Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP
3	SATA_TXN	4	GND
5	SATA_RXN	6	SATA_RXP
7	GND		

SATA Connector (7-pin and 15pin)

Connector type: Standard Serial ATAII 7P and 15P
Connector location: SATA1



Pin	Definition	Pin	Definition
S1	GND	S2	SATA_TXP
S3	SATA_TXN	S4	GND
S5	SATA_RXN	S6	SATA_RXP
S7	GND		
P1-3	NC	P4-6	GND
P7-9	VCC5	P10,12	GND
P11	NC	P13-15	VCC12

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SATA DOM Power Connector

Connector type: 1x2 2-pin header, 2.5mm pitch
Connector location: J11

Pin	Definition
1	VCC5
2	GND

RTC Battery Connector

Connector type: 1x2 2-pin header, 1.25mm pitch
Connector location: J8

Pin	Definition
1	GND
2	3V

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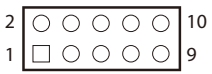
MCU Debug

Connector type: 1x3 3-pin header
Connector location: JP6

Pin	Definition
1	TX
2	RX
3	GND

GPIO Pin Header

Connector type: 2x5 10-pin header
Connector location: JP1



Pin	Definition	Pin	Definition
1	GPI1	2	GPO1
3	GPI2	4	GPO2
5	GPI3	6	GPO3
7	GPI4	8	GPO4
9	GND	10	VCC5

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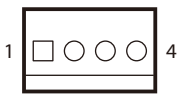
MCU Download Connector

Connector type: 1x5 5-pin header, 2.54mm pitch
Connector location: JP7

Pin	Definition
1	VCC3
2	C2D
3	MRST
4	C2CK
5	GND

FAN Connectors

Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: FAN1 and FAN2



Pin	Definition
1	GND
2	VCC
3	SPEED
4	CONTROL

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Chapter 3: System Setup

Removing the Chassis Cover

Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. The screws on the bottom and back of cover are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.

2. With the bottom side of the chassis facing up, remove the mounting screw of the bottom cover and then put them in a safe place for later use.

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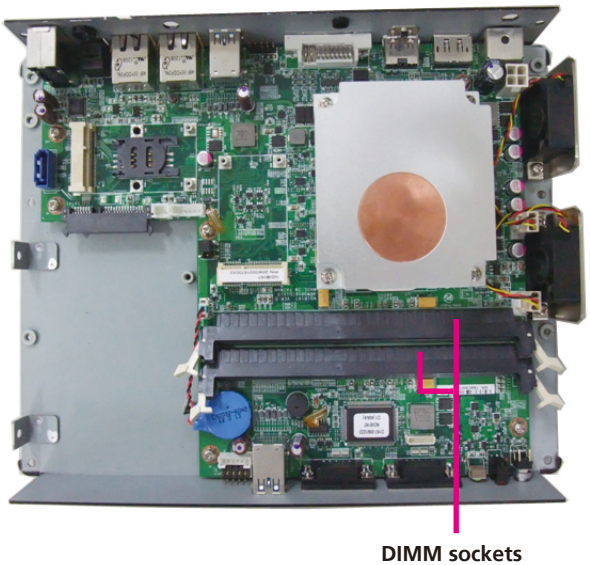
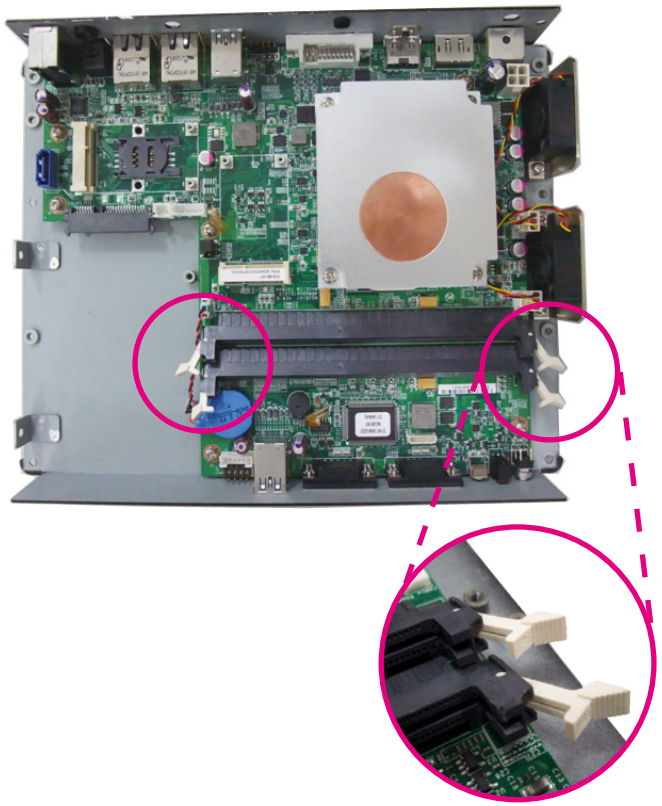
Installing a DIMM

1. Locate the DIMM socket on the board.



2. Push the ejector tabs which are at the ends of the socket outward. This indicates that the socket is unlocked.



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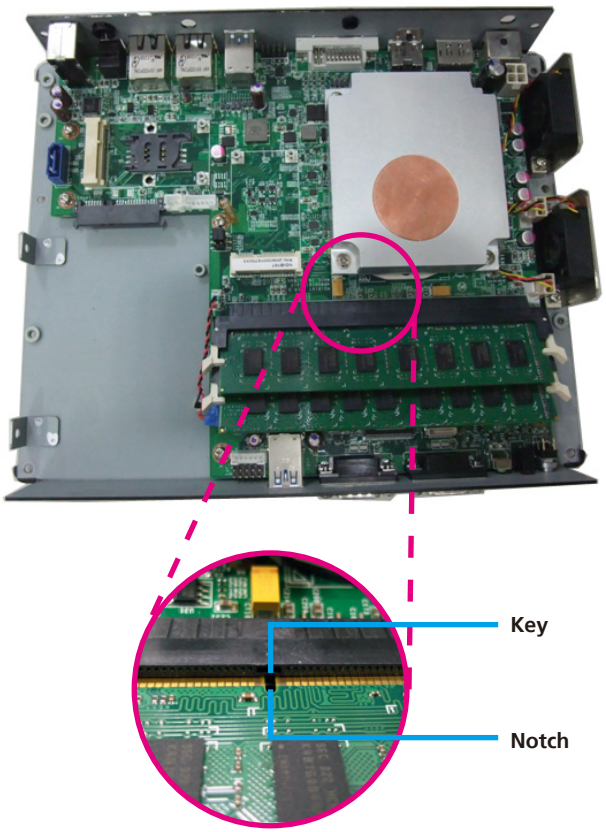
3. Note how the module is keyed to the socket. Grasping the module by its edges, align the module with the socket so that the "notch" on the module is aligned with the "key" on the socket. The key ensures the module can be plugged into the socket in only one direction.



4. Insert the module into the socket at an approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips down into the socket. The contact fingers on the edge of the module will almost completely disappear inside the socket.

The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.

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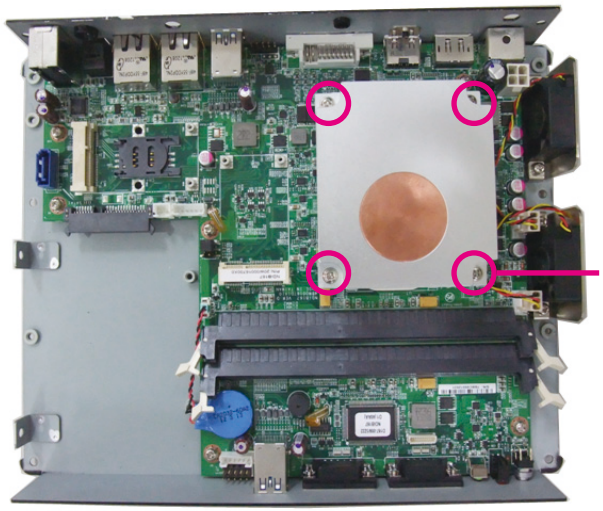
Installing the CPU

1. Loosen the mounting screws that secure the heat sink to the chassis.



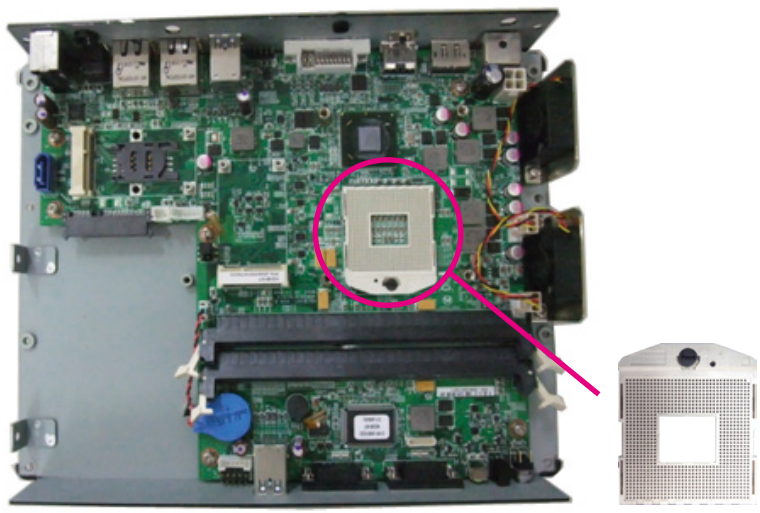
Mounting Screw

- Make sure all power cables are unplugged before you install the CPU.
- The CPU socket must not come in contact with anything other than the CPU. Avoid unnecessary exposure.

2. Now remove the heat sink to access the CPU socket.

Bottom Side of the Heat Sink

3. The CPU socket is readily accessible after you have removed the heatsink.



CPU socket

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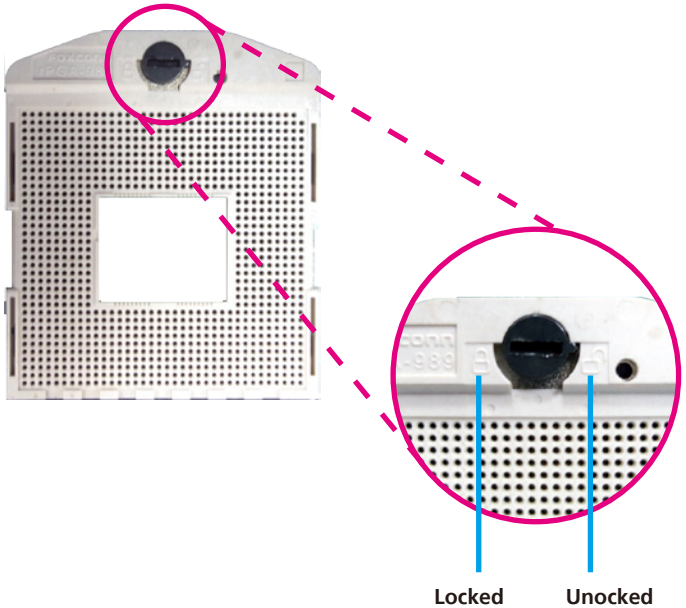
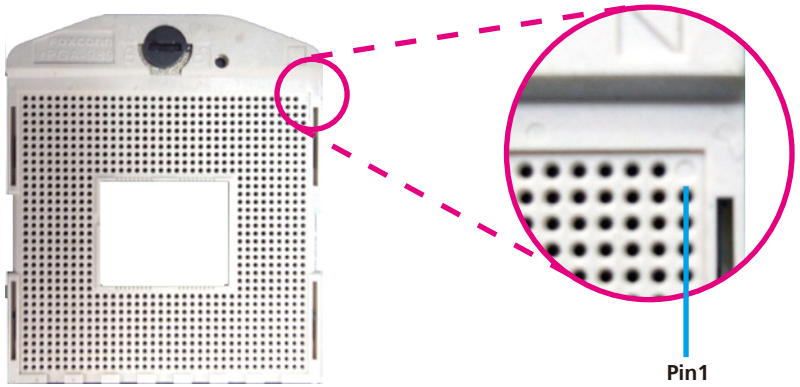
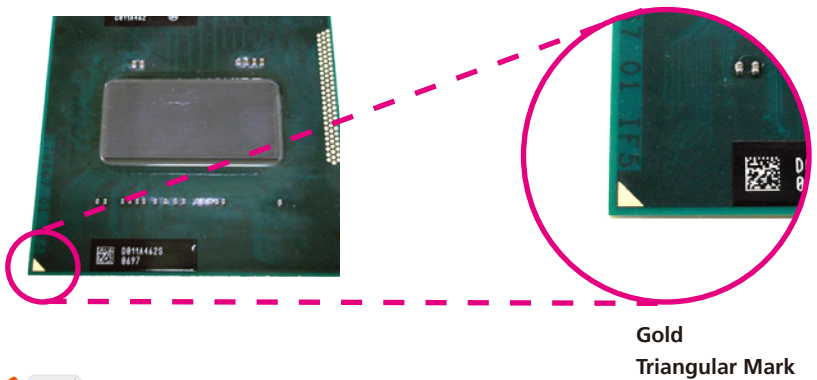
4. Use a screwdriver to turn the screw to its unlocked position.



5. Position the CPU above the socket. The gold triangular mark on the CPU must align with pin 1 of the CPU socket.





Handle the CPU by its edges and avoid touching the pins.

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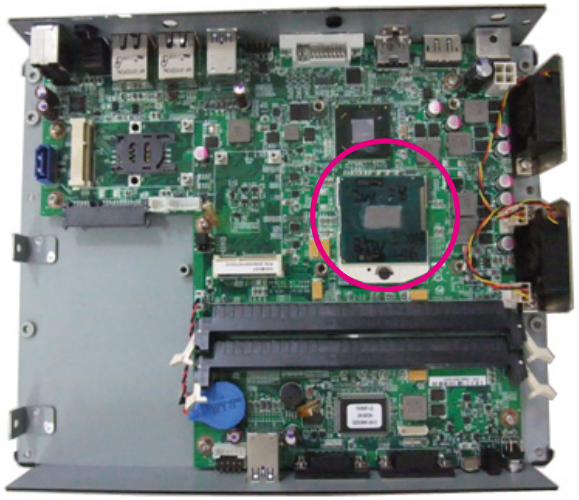
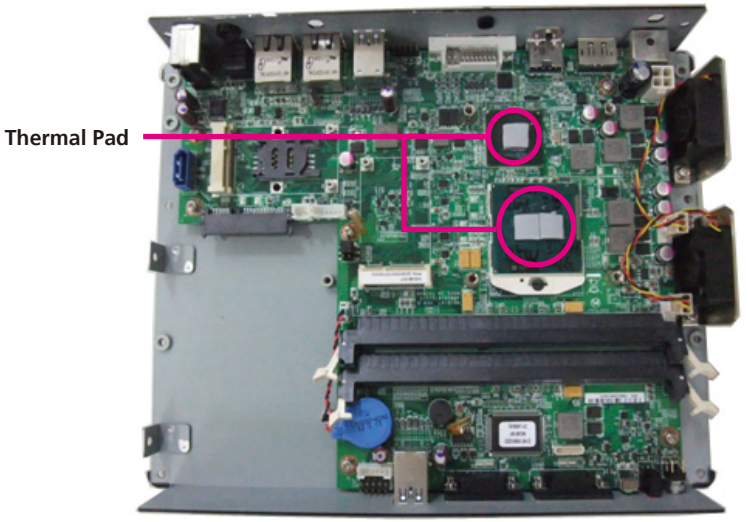
6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force. Use a screwdriver to turn the screw to its locked position.



CAUTION!

Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

7. Attach the thermal pad onto the CPU.



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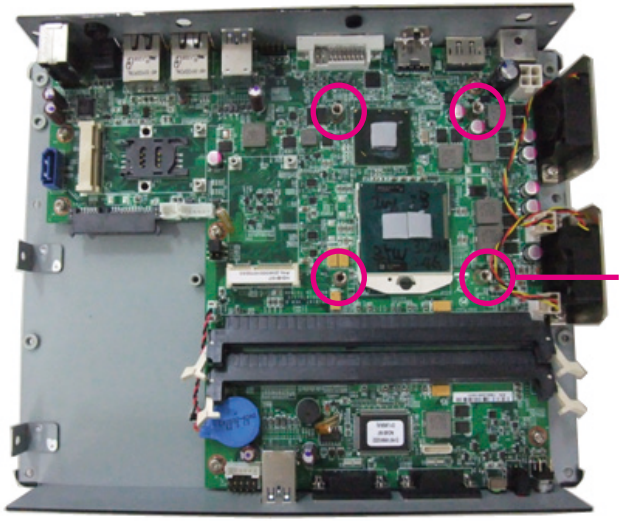
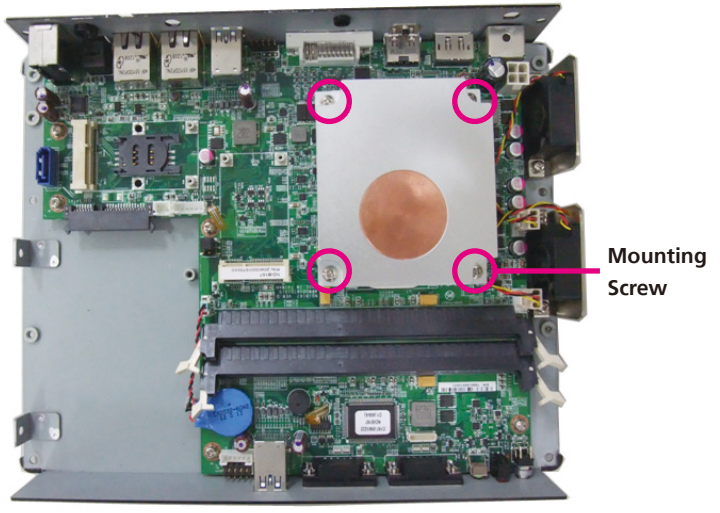
8. Align the mounting screws of the heat sink with the mounting holes on the board then tighten the screws to secure the heat sink in place.





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Installing a SATA Hard Drive

1. The drive bracket included in the package is used to hold a SATA hard drive.

2. Place the SATA hard drive onto the drive bracket. Align the mounting holes that are on the sides of the SATA drive with the mounting holes on the drive bracket.

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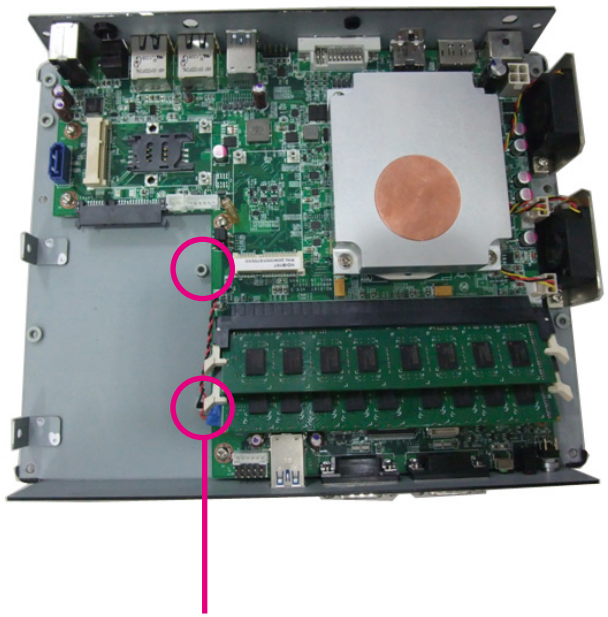
3. Use the provided screws to secure the SATA drive in place.

Mounting Screw

4. Secure the SATA Drive with the provided mounting screw.



Mounting Studs

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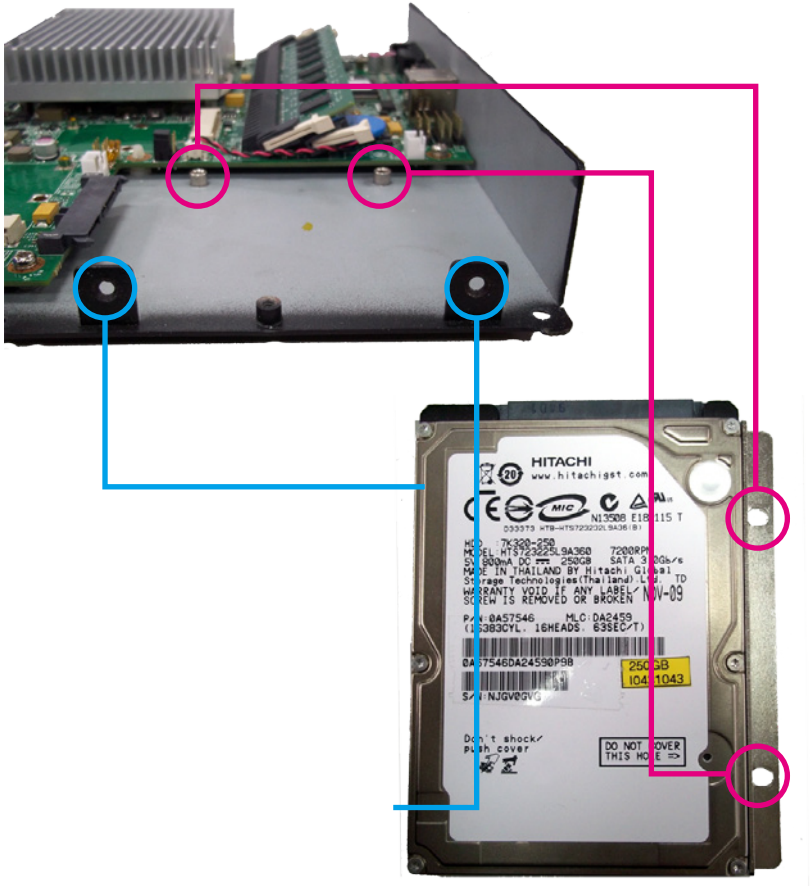
5. The mounting holes on the drive bracket and chassis are used to secure hard drive to the chassis.



6. Locate for the SATA connector and the SATA power connector on the SATA drive.

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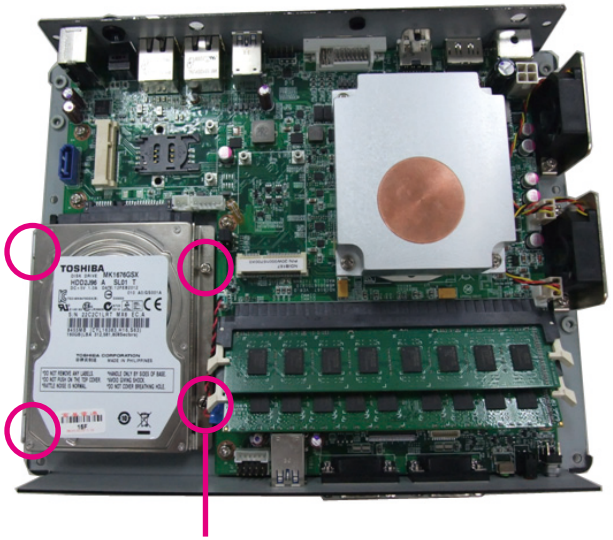
7. Align the mounting holes of the drive bracket with the mounting studs on the board then use the provided mounting screws to secure the hard drive in place.



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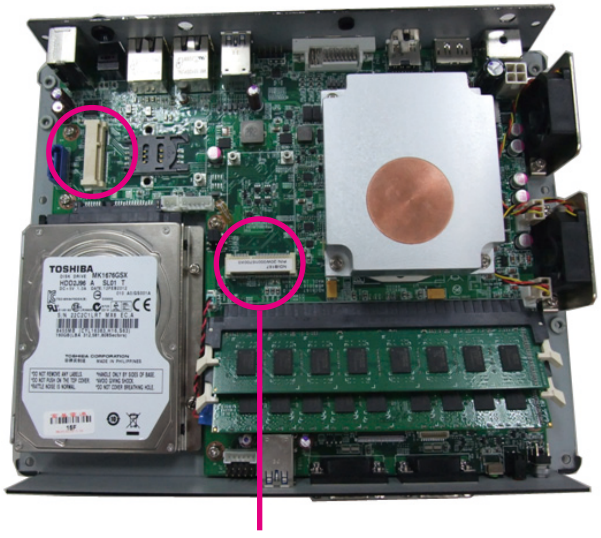
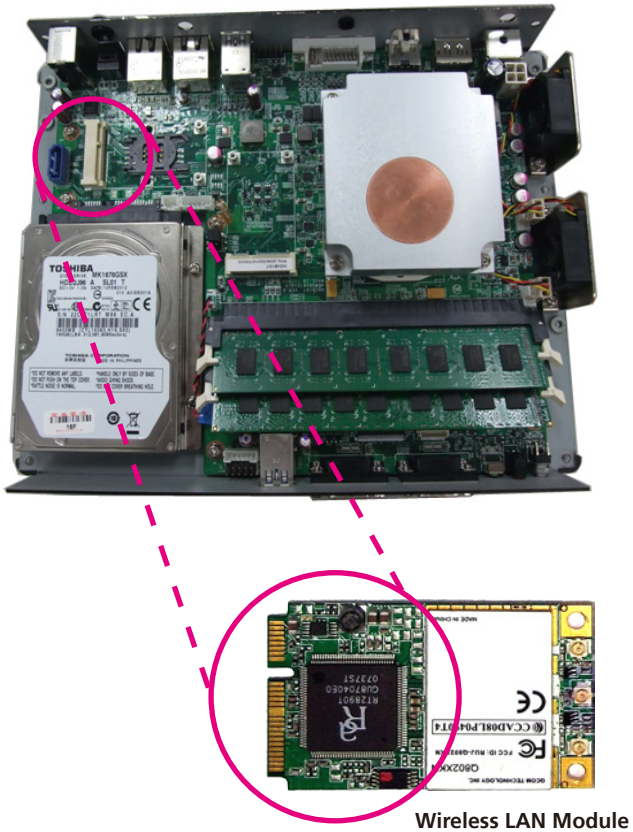
Installing a Wireless LAN Module

1. Locate the Mini PCI Express slot on the board.



Mini PCI Express Slot

2. Insert the wireless LAN module into the Mini PCI Express slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.



Wireless LAN Module

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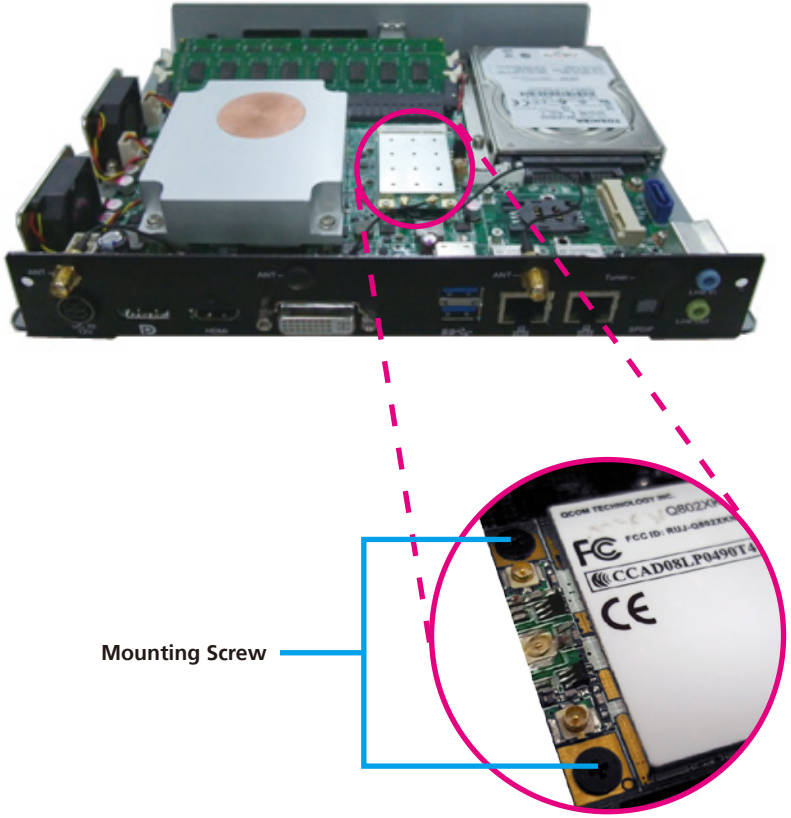
3. Push the module down then secure it with mounting screws.



4. Attach one end of the RF cable onto the WiFi module.

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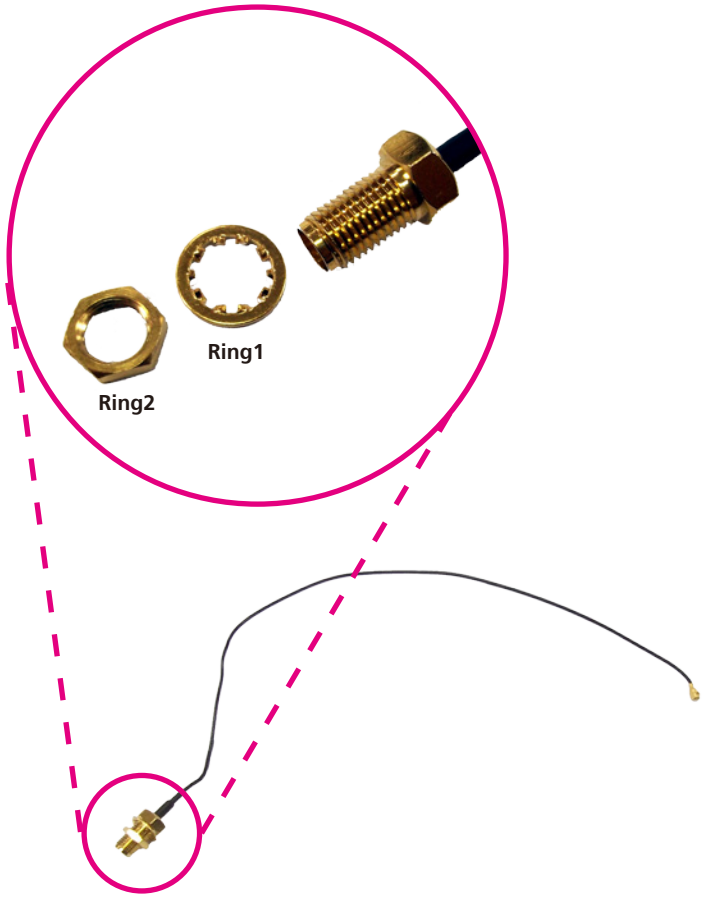
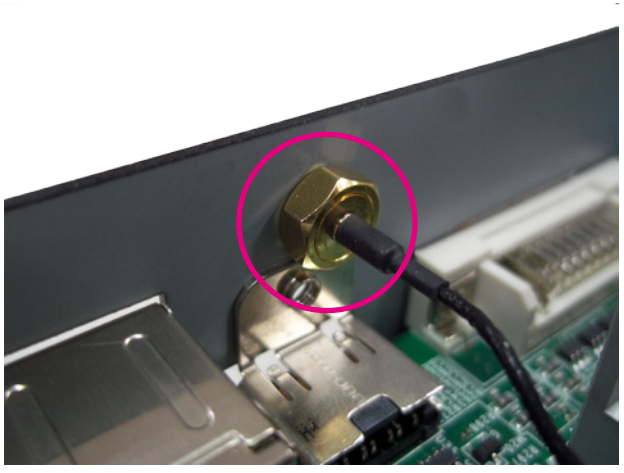
5. Insert the 2 rings (ring 1 then ring 2) into the WiFi antenna jack.



6. Now mount the WiFi antenna jack to the WiFi antenna hole located at the rear panel of the chassis then tighten the rings.



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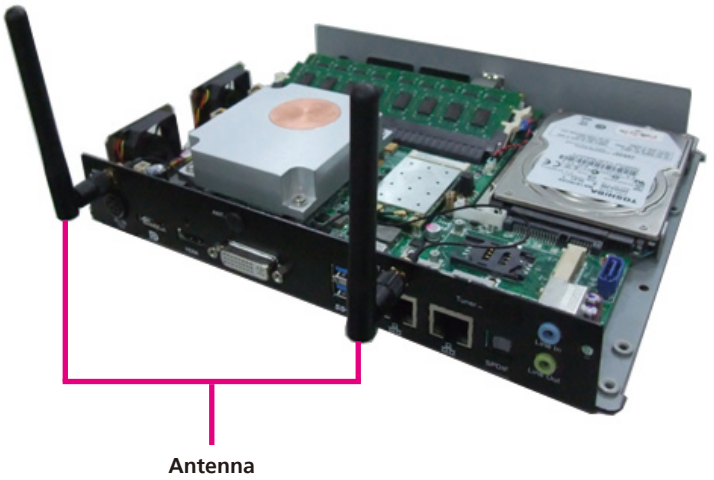
7. The photo below shows the WiFi antenna jack attached at the rear panel of the chassis.

8. Now connect the external antennas to the WiFi antenna jack.



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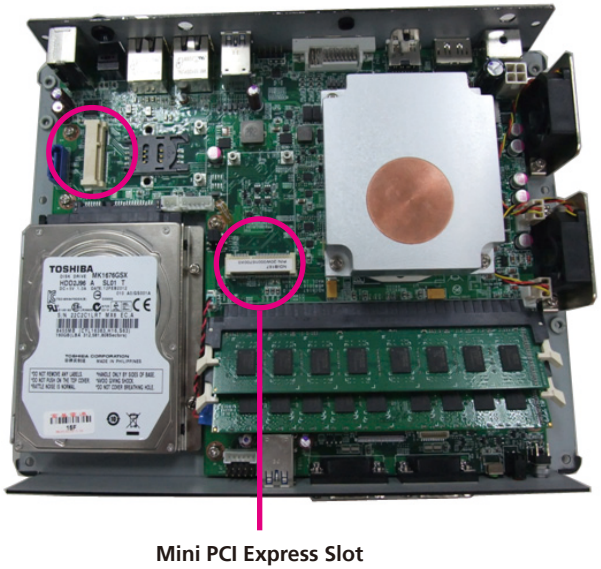
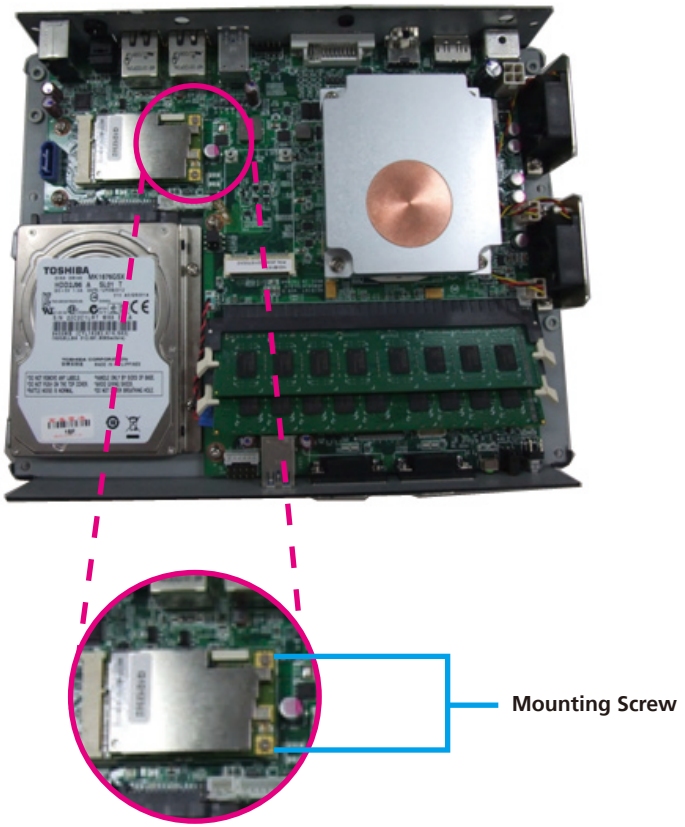
Installing a TV Tuner Module

1. Locate the Mini PCI Express slot on the board.



2. Insert the TV Tuner module into the Mini PCI Express slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot. Push the module down then secure it with mounting screws.



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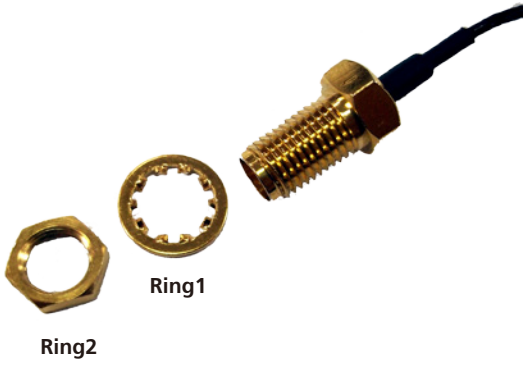
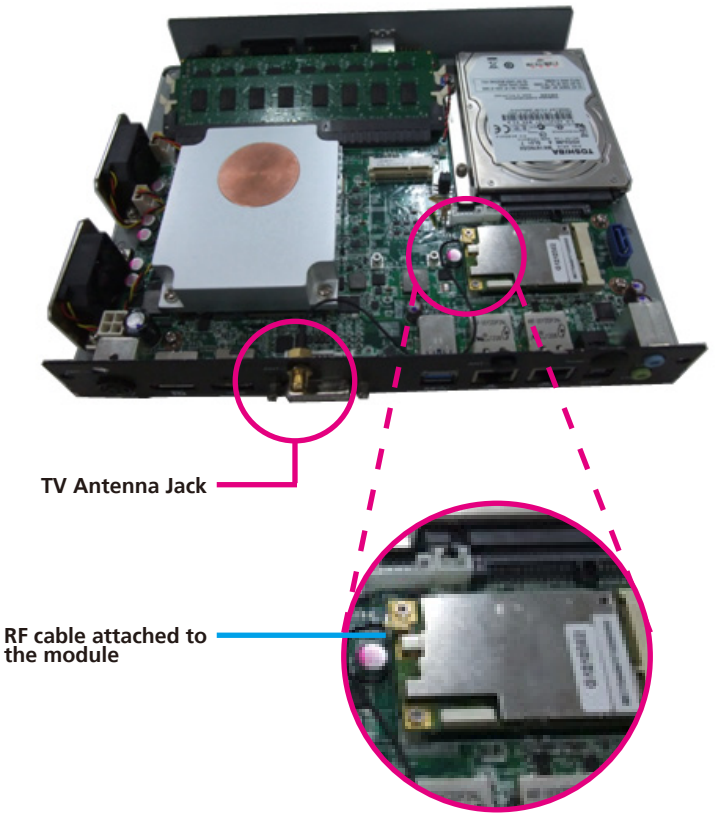
3. Insert the 2 rings (ring 1 then ring 2) into the TV antenna jack.



4. Attach one end of the RF cable onto the module. Then mount the TV antenna jack to the TV antenna hole located at the front panel of the chassis then tighten the rings.



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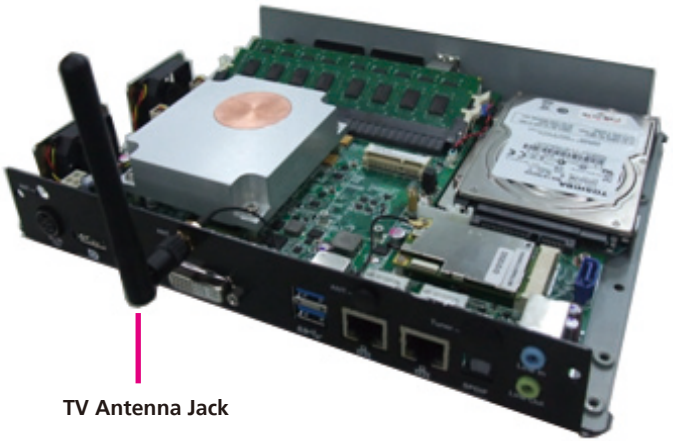
5. Connect an external TV antenna to the TV antenna jack.



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Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the NDiS 167. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM Web site at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

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Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT PRESS Ctrl + Alt + Esc

Press the Del key to enter Setup:

Legends

Key	Function
← →	Moves the highlight left or right to select a menu.
↑ ↓	Moves the highlight up or down between sub¬menus or fields.
Esc	Exits the BIOS Setup Utility.
+	Scrolls forward through the values or options of the highlighted field.
–	Scrolls backward through the values or options of the highlighted field.
Tab	Selects a field.
F1	Displays General Help.
F2	Load previous values.
F3	Load optimized default values.
F4	Saves and exits the Setup program.
Enter	Press <Enter> to enter the highlighted sub¬menu

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Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press

.

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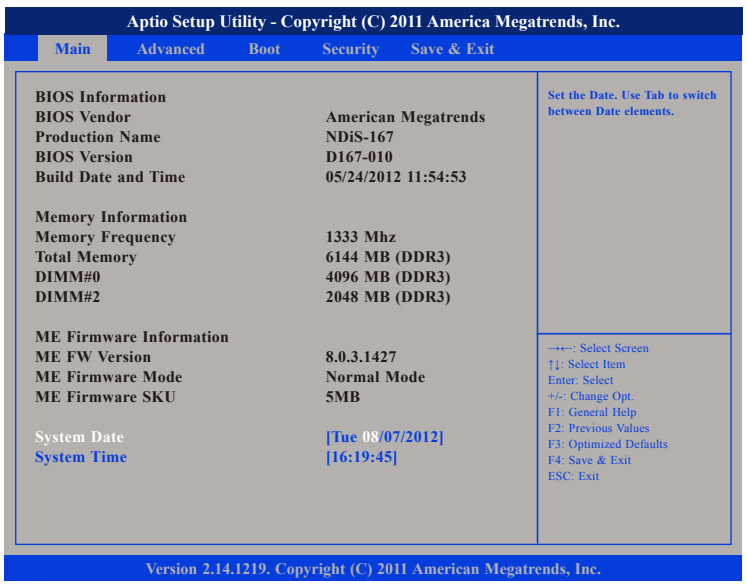
BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

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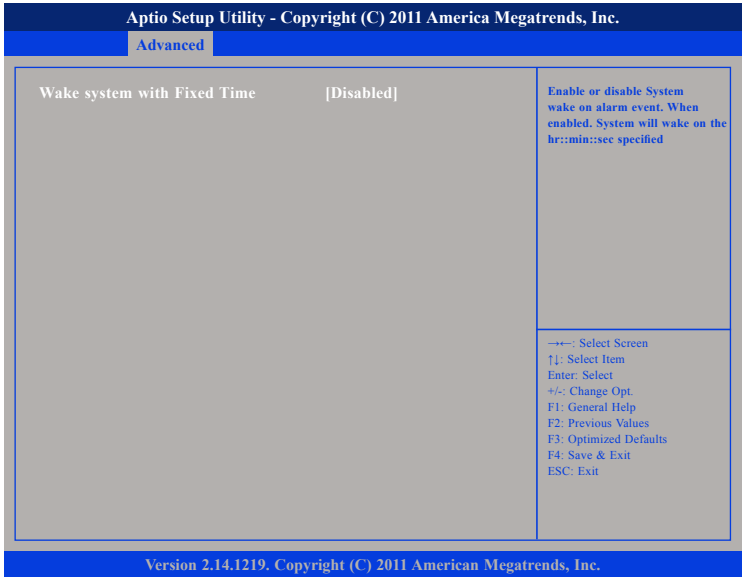
Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.

RTC Wake Settings

This section is used to enable or disable system to wake using RTC alarm.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Wake system with Fixed Time
[Disabled]
Enable or disable System wake on alarm event. When enabled. System will wake on the hr::min::sec specified
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Wake system with Fixed Time

This section is used to enable or disable system wake on alarm event. When enabled, system will wake on the HR:MIN:SEC specified.

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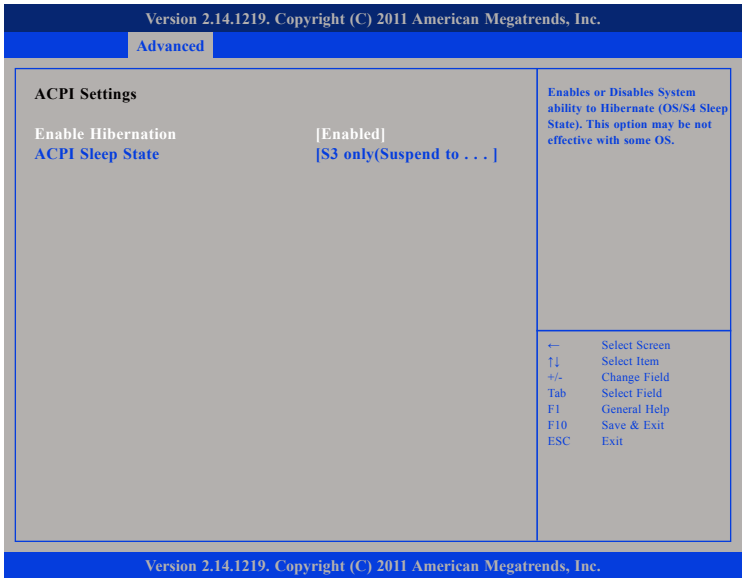
ACPI Settings

This section is used to configure ACPI Settings.


Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
Enable Hibernation [Enabled]
ACPI Sleep State [S3 only(Suspend to . . .]
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
← Select Screen
↑↓ Select Item
+/- Change Field
Tab Select Field
F1 General Help
F10 Save & Exit
ESC Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

CPU Configuration

This section is used to configure the CPU.

Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
CPU Configuration
Intel(R) Core(TM) CPU i3-3120ME CPU @ 2.40GHz
CPU Signature 306a8
Microcode Patch 10
CPU Speed 2400 MHz
Processor Cores 2
Intel HT Technology Supported
Intel VT-x Technology Supported
Intel SMX Technology Not Supported
64-bit Supported
Hyper-threading [Enabled]
Intel Virtualization Technology [Disabled]
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Hyper Threading

Enables or disables hyper-threading technology.

Intel® Virtualization Technology

Enables or disables Intel® Virtualization technology.

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SATA Configuration

This section is used to configure the SATA drives.

SATA Controller(s)

Enables or disables SATA device.

SATA Mode Selection

Configures the SATA as IDE, AHCI or RAID mode.

IDE This option configures the Serial ATA drives as Parallel ATA physical storage device.

AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

Serial ATA Port 0 to Serial ATA Port 1

Displays information on the SATA devices detected.

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Graphics Configuration

Configures the graphic chip settings.

LCD Control

Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
LCD Control
Primary IGFX Boot Display [HDMI]
Secondary IGFX Boot Display [Disabled]
Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

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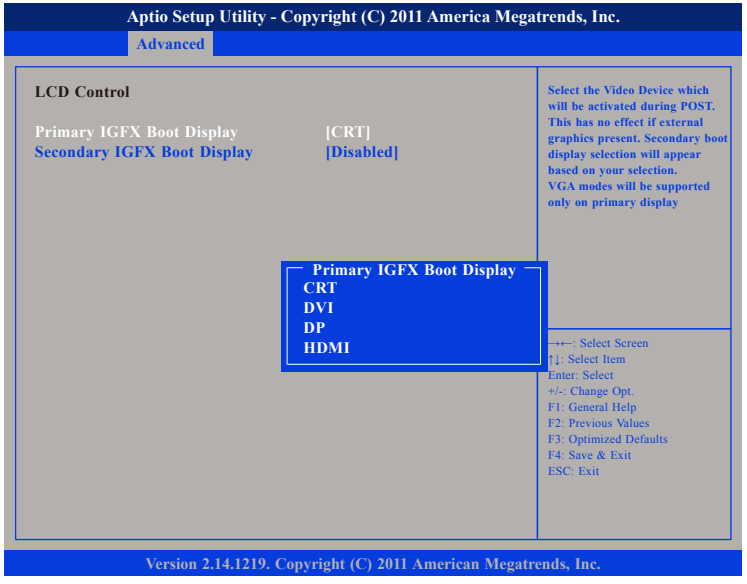
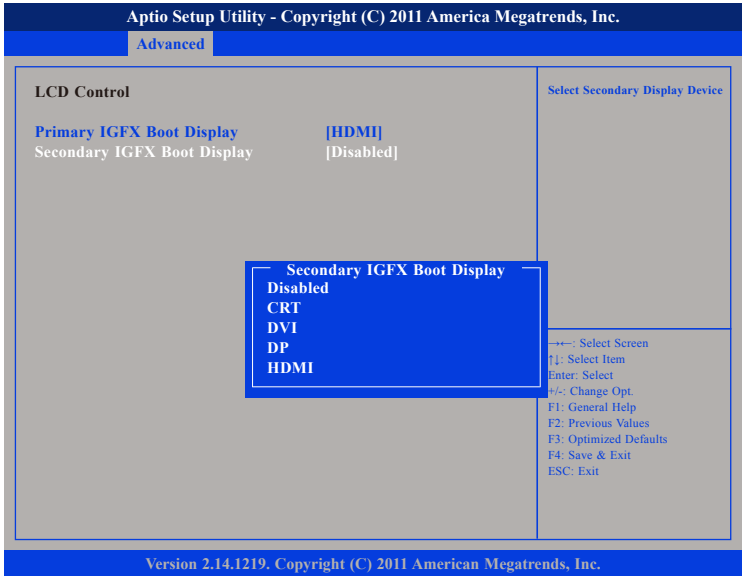
Primary IGFX Boot Display


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
LCD Control
Primary IGFX Boot Display [CRT]
Secondary IGFX Boot Display [Disabled]
Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display
Primary IGFX Boot Display
CRT
DVI
DP
HDMI
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Select the video device which will be activated during POST. Has no effect if external graphics is present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

Secondary IGFX Boot Display



Select the secondary display device.

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AMT Configuration

This section is used to configure Active Management Technology (AMT) options.

Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Intel AMT [Enabled]
BIOS Hotkey Pressed [Disabled]
MEBx Selection Screen [Disabled]
Enable/Disable Intel (R) Active Management Technology BIOS Extension.
Note : iAMT H/W is always enabled.
This option just controls the BIOS extension execution.
If enabled, this requires additional firmware in the SPI device
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Intel® AMT

Enables or disables Intel® Active Management Technology.

BIOS Hotkey Pressed

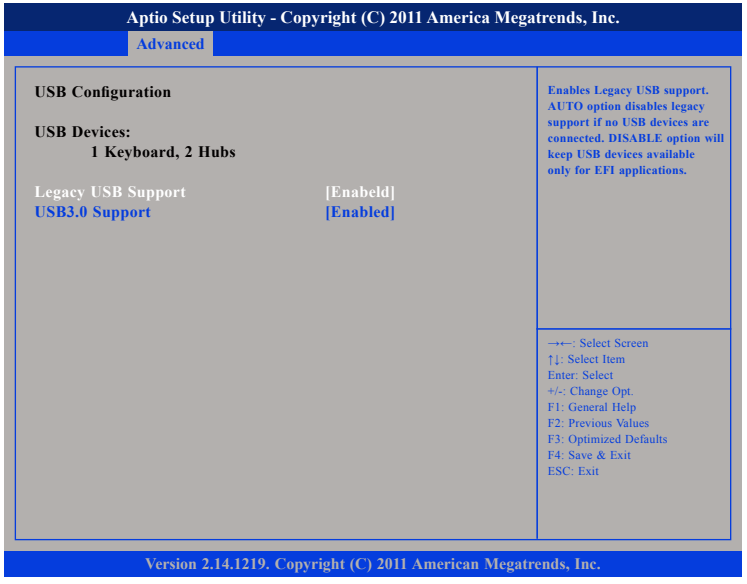
Enables or disables BIOS hotkey press.

MEBx Selection Screen

Enables or disables MEBx selection screen.

USB Configuration

This section is used to configure the USB.


Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Keyboard, 2 Hubs
Legacy USB Support [Enabeld]
USB3.0 Support [Enabled]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Legacy USB Support

Enable Enables Legacy USB.
Auto Disables support for Legacy when no USB devices are connected.
Disable Keeps USB devices available only for EFI applications.

USB3.0 Support

Enables or disables USB 3.0 controller support.

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Super IO Configuration

This section is used to configure the serial ports.

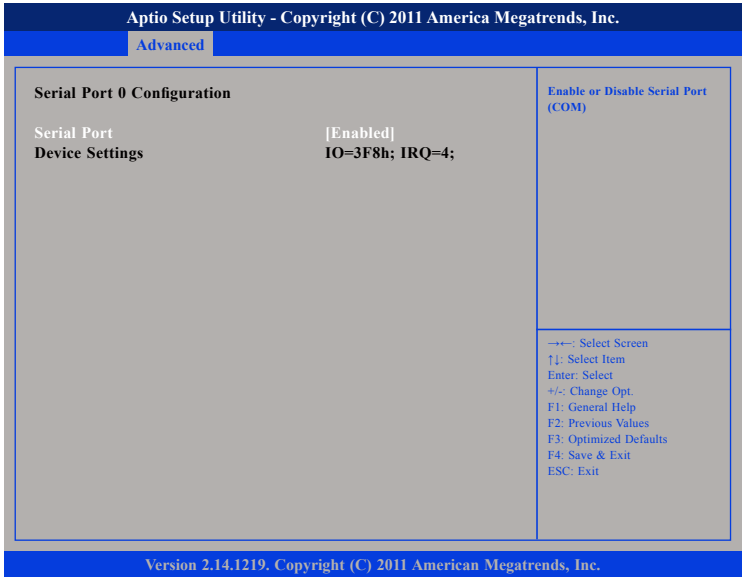
Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Advanced
Super IO Configuration
Super IO Chip IT8728
▸ Serial Port 0 Configuration
▸ Serial Port 1 Configuration
Set Parameters of Serial Port O (COMA)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 0 Configuration

This section is used to configure serial port 0.



Serial Port

Enables or disables the serial port.

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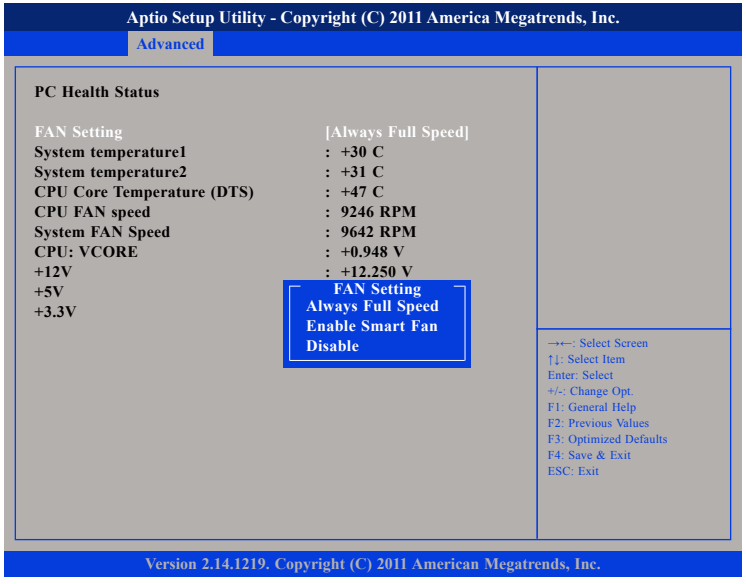
H/W Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



FAN Setting
Controls the speed of the fans, the options are Always Full Speed, Enable Smart Fan and Disable.

System Temperature 1 to System Temperature 2
Detects and displays the internal temperature of the system.

CPU Core Temperature (DTS)
Detects and displays the current CPU temperature.

CPU FAN Speed and System FAN Speed
Detects and displays the current system fan and CPU fan speed in RPM.

CPU: VCORE
Detects and displays the Vcore CPU voltage.

12V
Detects and displays 12V voltage.

5V
Detects and displays 5V voltage.

3.3V
Detects and displays 3.3V voltage.

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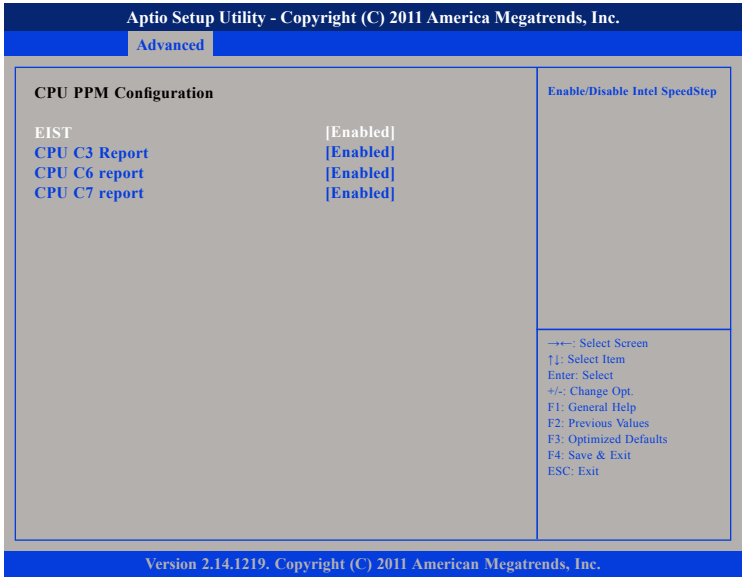
CPU PPM Configuration

This section is used to configure the Processor Power Management (PPM) configuration.



EIST
Enables or disables Intel® SpeedStep.

CPU C3 Report
Enables or disables C3 report to the operating system.

CPU C6 Report
Enables or disables C6 report to the operating system.

CPU C7 Report
Enables or disables C7 report to the operating system.

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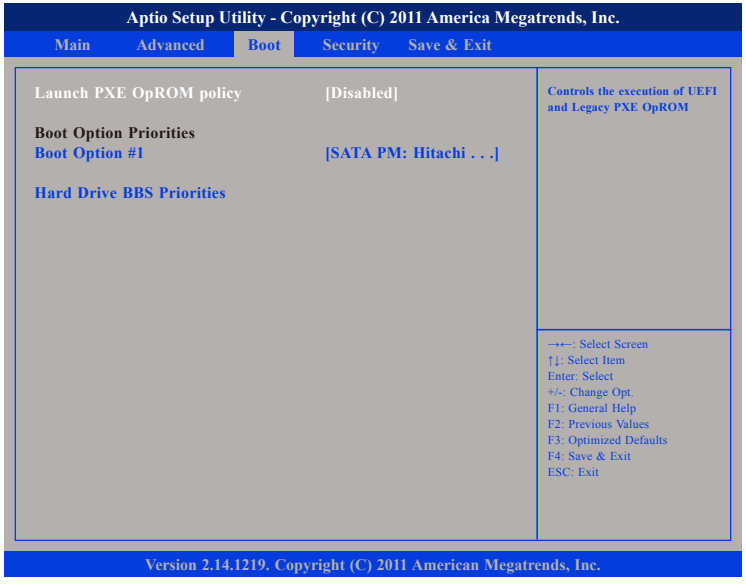
Boot

This section is used to configure the boot features.



Launch PXE OpROM Policy

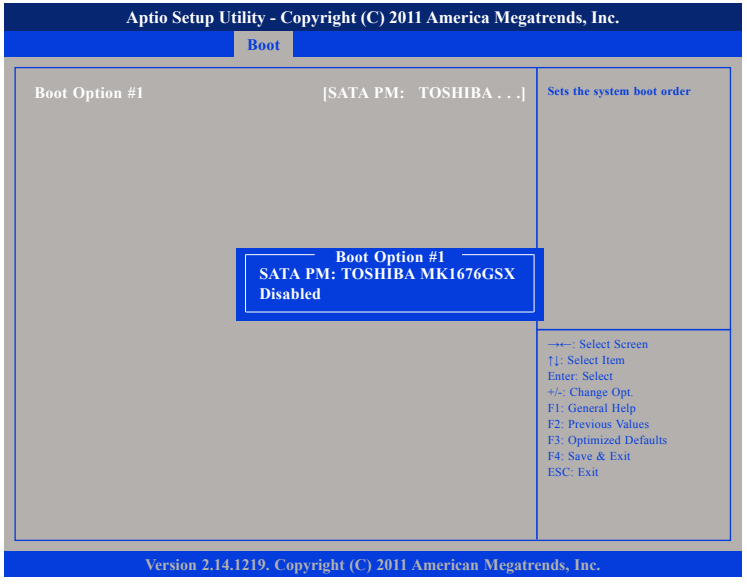
Controls the execution of UEFI and legacy PXE OpROM.

Boot Option Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

Hard Drive BBS Priorities

Boot Option #1



Sets the first legacy device to boot from.

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Security

Aptio Setup Utility - Copyright (C) 2011 America Megatrends, Inc.
Main
Advanced
Boot
Security
Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User Will have Administrator rights.
The password length must be in the following range:
Minimum length
Maximum
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Administrator Password

Select this to reconfigure the administrator's password.

User Password

Select this to reconfigure the user's password.

Save & Exit

Save Changes and Exit

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset

To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Load Optimized Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

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Appendix A: Watchdog Timer

NDiS 167 features a watchdog timer that resets the CPU or generates an interrupt if the processor stops operating for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

Watchdog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt.
6	WDT is reset upon a KBC (mouse) interrupt.
5	WDT is reset upon a KBC (keyboard) interrupt.
4	WDT is reset upon a read or a write to the Game Port base address.
3-2	Reserved
1	Force Time-out. This bit is self-clearing.
	WDT Status
0	1: WDT value reaches 0.
	0: WDT value is not 0.

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Watchdog Timer Configuration Register (Index=72h, Default=001s0000b)

Bit	Description
7	**WDT Time-out value select 1** 1: Second 0: Minute
6	**WDT output through KRST (pulse) Enable** 1: Enable 0: Disable
5	**WDT Time-Out Value Extra Select** 1: 64ms x WDT Timer-out value (default=4s) 0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	**WDT Output through PWEGD Enable** 1: Enable 0: Disable During LRESET# this bit is selected by JP2 power-on strapping option.
3-0	**Interrupt level Select for WDT.**

Watch Dog Timer Time-out value (LSB) Register (Index=73h, default=38h)

Bit	Description
7-0	**WDT Time-out value select 7-0**

Watch Dog Timer Time-out value (MSB) Register (Index=74h, default=00h)

Bit	Description
7-0	**WDT Time-out value select 15-8**

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Appendix B: GPI/O Programming Guide

This appendix provides definitions for the GPI/O pins in NDiS 167. GPI/O (General Purpose Input/Output) pins are provided for custom system design. The pin programmed as input mode (GPI) or output mode (GPO) depends on the configuration.

GPIO Configuration

Address: A02

DATA	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
GPIO mapping	GPI4	GPI3	GPI2	GPI1	X	X	X	GPO4

Address: A00

DATA	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	10
GPIO mapping	X	X	X	GPO3	X	GPO2	GPO1	X	GPI 3

Example:

Output data (1010) through GPO
Setp1: At Debug mode
Setp2: Set Data at address A02 and A00

C:\debug
-o A02 F1
-o A00 ED

Read data from GPI
Setp1: At Debug mode
Setp2: Read Data at A02 (Input data is 1010)

C:\debug
-i A02
-AF

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Appendix C: Triple Display Settings

NDiS 167 is capable of driving triple display from DisplayPort, HDMI, and DVI simultaneously. However, the default setting of Active Display in Intel® Graphic and Media Control Panel is dual display. So you need to change to three in Active Display if you would like to have triple displays.

As DisplayPort is still not a popular interface in most displays, you may need to use adapter to convert the interface to HDMI, DVI, or VGA. Note that only active mode adapter can be used for correct signal conversion

Operating systems supporting triple displays: Windows 7/ Windows Embedded Standard 7

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